

CLAIMS

What is claimed is:

- 1 1. A retroreflective article comprising:
2 a) a microporous substrate containing a plurality of pores which
3 are less than $0.5\ \mu\text{m}$ in diameter; and
4 b) a layer of reflective material located on the surface of the
5 substrate such that said layer at least partially obscures a plurality of the
6 pores of the substrate.
- 1 2. A retroreflective article, as set forth in claim 1, additionally comprising
2 a protective coating material layer, overlying said layer of metal.
- 1 3. A retroreflective article, as set forth in claim 2, wherein said protective
2 coating material is selected from the group consisting of polyurethanes,
3 polymethylmethacrylate and copolymers thereof, styrene-acrylonitriles,
4 polystyrene, polycarbonate, organosiloxanes, amorphous polyolefins,
5 evaporative dielectric coatings and other transparent materials.
- 1 4. A retroreflective article as set forth in claim 1, wherein said substrate
2 contains a plurality of pores which have diameters which are less than
3 the wavelength of visible light.
- 1 5. A retroreflective article, as set forth in claim 1, wherein said substrate
2 is comprised of a nanoporous polymeric film.
- 1 6. A retroreflective article, as set forth in claim 4, wherein said substrate
2 is in the form of a fabric.
- 1 7. A retroreflective article, as set forth in claim 5, wherein said substrate
2 is selected from the group consisting of polyethylene,

3 polytetrafluoroethylene, polypropylene, polyethylene terephthalate,
4 polymethylmethacrylate and polyacetates.

1 8. A retroreflective article, as set forth in claim 1, wherein said reflective
2 material layer is selected from the group consisting of metals and
3 dielectric coatings.

1 9. A retroreflective article, as set forth in claim 8, wherein said metals are
2 selected from the group consisting of aluminum, chromium, nickel,
3 silver and gold.

1 10. A retroreflective article, as set forth in claim 9, wherein said reflective
2 material is aluminum.

1 11. A retroreflective article, as set forth in claim 10, wherein said reflective
2 material layer has a thickness of between about 0.001 to about 0.0001
3 inches (about 0.025 to about 0.0025 mm).

1 12. A retroreflective article, as set forth in claim 1, wherein an optical
2 performance enhancing characteristic has been introduced into said
3 article.

1 13. A retroreflective article, as set forth in claim 12, wherein said optical
2 performance enhancing characteristic is a repeating corner cube design.

1 14. A retroreflective article, as set forth in claim 1, additionally comprising
2 an adhesive layer located on the side of said substrate opposite to the
3 side on which said reflective material layer is deposited.

1 15. A retroreflective article, as set forth in claim 1, affixed to a carrier
2 substrate member via said adhesive layer.

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- 1 16. A method for the production of a reflective article comprising the steps
2 of:
3 a) providing a substrate which contains pores which have a
4 diameter of less than 0.5 μm ; and
5 b) applying a layer of reflective material to the substrate in such
6 a way that said layer at least partially obscures a plurality of the pores
7 of the substrate.
- 1 17. The method, as set forth in claim 16, further comprising the step of
2 applying a protective layer to said reflective article, overlying said layer
3 of metal.
- 1 18. The method, as set forth in claim 17, wherein said protective coating
2 material is selected from the group consisting of polyurethanes,
3 polymethylmethacrylate and copolymers thereof, styrene-acrylonitriles,
4 polystyrene, polycarbonate, organosiloxanes, amorphous polyolefins,
5 evaporative dielectric coatings and other transparent materials.
- 1 19. The method, as set forth in claim 16, wherein said reflective material is
2 selected from the group consisting of metals and dielectrics.
- 1 20. The method, as set forth in claim 19, wherein said metal layer is selected
2 from the group consisting of aluminum, chromium, nickel, silver and
3 gold.
- 1 21. The method, as set forth in claim 20, wherein said metal is aluminum
2 and is applied in a layer that is between about 0.001 to about 0.0001
3 inches (about 0.0254 to about 0.00254 mm) thick.

- 1 22. The method, as set forth in claim 16, further comprising the step of
2 processing said article to introduce optical performance enhancing
3 characteristics.
- 1 23. The method, as set forth in claim 22, wherein said step of processing to
2 introduce optical performance enhancing characteristics comprises
3 embossing said article using calendar rolls or flat plates.
- 1 24. The method, as set forth in claim 23, wherein said step of processing
2 includes heating said calendar rolls.
- 1 25. The method, as set forth in claim 23, wherein said step of processing to
2 introduce optical performance enhancing characteristics includes
3 introducing a repeating corner cube design into said reflective layer.